FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 811. (No. 28, Vol. XVI.) JULY 10, 1924 [Weekly, Price 6d. Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2

Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:

United Kingdom .. 30s. 4d. Abroad .. .. 33s. 0d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

* *European subscriptions must be remitted in British currency*

CONTENTS

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list :—

1924

July 24–Aug. 10 Tour de France for Light 'Planes
Aug. 4 .... Aerial Derby at Lympne
,, 4 .... Holiday Light Aeroplane Handicap at Lympne
,, 12 .... King's Cup Race
Sept. 8–13 Light 'Plane Competitions at Lympne
,, 13 .... Grosvenor Challenge Cup Race at Lympne.
Oct. 2 .... Aero Golfing Society. Autumn Meeting, at Moor Park Golf Club, for A.G.S. Challenge Cup presented by Cellon (Richmond) Ltd.
October .... Schneider Cup Race, Baltimore, U.S.

EDITORIAL COMMENT.

IN a recent conversation with Captain Geoffrey de Havilland, that famous aircraft designer made to us the statement that after carefully going into the matter his firm has decided not to build any light 'planes for the competitions to be held at Lympne in September. These competitions, it will be remembered, are for two-seaters with engines whose cylinder capacity is limited to 1,100 c.c., and the feature aimed at is speed range. Very large prizes are offered, the Air Ministry having put up two prizes: a first prize of £2,000 and a second prize of £1,000, while His Grace the Duke of Sutherland is offering a prize of £500 for the best get-off and pull-up, and Capt. C. B. Wilson a second prize of £100. More recently the Society of Motor Manufacturers and Traders has added another £150, as has also the British Cycle and Motor-Cycle Manufacturers and Traders Union. The objects for which these last two prizes will be awarded have not yet been announced, but at any rate the total amount to be won by light 'plane two-seaters will be no less than £3,900. In proportion to the cost of a light 'plane this amount is distinctly generous; in fact, it might even be termed excessive, having regard to the ridiculously small money prizes available for other types.

Light 'Plane or ?

Thus the Aerial Derby can only show a total of £400 for pure speed machines, some of which will cost thousands of pounds to build, while the total amount of prizes, including those for machines in the Aerial Derby Handicap, reaches the modest figure of £575 only. However, whatever may be one's opinion on this subject, there is no gainsaying the fact that the Light 'Plane Meeting at Lympne is very generously endowed, and when, therefore, one learns that a firm such as the de Havilland Aircraft Co., Ltd., has decided not to enter a machine, the question naturally arises: What is the reason? There can, of course, be no trace of doubt but that a firm of such standing could produce a machine which would put up a

splendid performance in the competitions, and so that as a reason can be ruled out at once. The prizes available are such as to make the entering of a machine a not unreasonable financial speculation, and any aircraft firm would appear to be justified in spending money on producing at least one machine for the competitions.

That no doubt will be the view taken by the majority, and for the sake of the sport of flying we hope that such will be the case. If the de Havilland Aircraft Co. has decided not to enter it seems reasonable to suppose that this is because Capt. de Havilland and his technical co-workers are of the opinion that the type of machine that will result from the competitions will have no practical utility afterwards. This, in fact, is the view put forward to us by Capt. de Havilland recently, and we confess that we experienced not a small degree of surprise to hear it.

That this view will be shared by the majority of designers we rather doubt, and personally we are not prepared, at this stage of light 'plane development, either to accept it or to reject it. At any rate, the views of a designer of Capt. de Havilland's standing are entitled to the very fullest consideration, and we should like to see the matter discussed in our correspondence columns, which we shall be glad to throw open to the ventilation of this very important subject.

From what we gathered, Capt. de Havilland has come to the conclusion that if a really reliable, strong, useful and safe machine is to be produced, the actual engine power for a two-seater should not be less than 50-b.h.p. The reserve of power then available would allow a machine to fly quite strongly even when its engine was not running at its best. With only 1,100 c.c., he maintains, the margin is so small as to put a very heavy strain on the engine, and the reliability is likely to suffer.

Somewhat by way of showing what he has in mind, it may be, Capt. de Havilland has produced the D.H. 51, described and illustrated in this issue of FLIGHT. Even that machine does not, we gather, represent Capt. de Havilland's ideal, but it was the best that could be done with the engines available at a reasonably low price. We understood from Capt. de Havilland that what he had in mind was an engine something like the Czech Walter engine, illustrated and described in FLIGHT on June 5 last. This engine develops 50-60 b.h.p., and is a five-cylinder radial air-cooled. With this amount of power, if engines could be obtained at fairly low cost, a really useful two-seater with good performance and, even more important, good reliability, could be produced, and would be of general utility not only for school work, but for the private owner pilot.

This is one side of the argument. On the other it will doubtless be maintained that as soon as one begins to get up to engines of this size and power the cost of the engine goes up, the amount of fuel consumed increases, the size and price of the machine itself is greater, and running costs are increased. In other words, we are back where we started, and performance and reliability are obtained, not by improved design, but by "piling on more power." Also, it has not yet, we think, been proved that a machine with 30 b.h.p. engine will not have a sufficient margin of power to enable it to be flown normally at something like 60 or 65 per cent. of its full power. One machine that has been designed for the competitions has an estimated top speed of 84 m.p.h., a landing speed, also estimated, of course, of 34 m.p.h. and a climb of 3,000 ft. in 9 minutes. These figures appear to indicate that a very good margin of power is available, and that it should be possible to cruise at something like 70 m.p.h. at not much more than 65 per cent. of the full power. A good light 'plane engine should be capable of running at this power for long periods, while the performance, both in speed and climb, is certainly not to be sneered at. The question of cruising, by the way, is one not peculiar to any one kind of machine, and it should be realised that there is always a very strong temptation to go "all-out," no matter whether the engine develops a maximum of 30 h.p. or of 300 h.p. It may, perhaps, be argued that in the case of a machine whose top speed is relatively low the temptation to fly at full power is greater, but we doubt whether there is really much in that argument.

When the Lympne competitions regulations were drawn up there was a good deal of discussion as to the maximum cylinder capacity that should be permitted. Some maintained that 1,100 c.c. was sufficient, while others thought that at least 2,000 c.c. should be permitted. In the end it was decided to limit the capacity to 1,100 c.c., the reasoning being that a specially-tuned engine of 1,100 c.c. would be approximately equivalent to a 1,500 c.c. engine or so, used by the average pilot and getting but medium attention and tuning. At any rate, the subject is one of very considerable importance, and one well worth discussion, but probably the time for this will be after the Lympne competitions, when there are concrete examples instead of theoretical estimates to work upon.

NO AERIAL DERBY?

JUST as this week's issue of FLIGHT is going to press it is learned that there is a possibility, amounting almost to a certainty, that there will be no Aerial Derby this year. The reason given is that the number of really high-speed entries has been so small that the race, as an international event, would be of but little interest. It is felt that to hold an Aerial Derby in which the pure speed contest is absent and reducing the race to an ordinary handicap for relatively slow machines would not be in the best interest of the sport, and so, after close consultation with the aircraft industry, it is likely to be decided to postpone indefinitely this year's Aerial Derby. Possibly the light 'plane handicap which was to have been held at Lympne on the day of the Aerial Derby will be flown on some other date, and in that case it would seem to be advisable to hold it at one of the London aerodromes.

The Air Ministry light 'plane two-seater competitions, which were to have taken place at Lympne from September 8 to September 13, have also been postponed, but fortunately, there is no suggestion that they should be abandoned. The new date has been fixed at September 29 to October 4, and the race for the challenge cup presented by Lord Edward Grosvenor will, presumably, be flown on the last day, *i.e.*, on October 4. The postponement is, we understand, chiefly due to difficulties in regard to engines, the consultations between the Air Ministry and the industry having resulted in so many changes and stipulations on the part of the former that it has not been found possible to get engines ready in time, and consequently it has been decided to postpone the competitions until the dates mentioned. Let us hope the weather will not be too unkind.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

AN ALL-METAL BRISTOL.

The Bristol "Bloodhound" is a two-seater fighter, built entirely of metal. Note the back-swept wings. The engine is a Bristol "Jupiter." (See page 436.)

THE BRISTOL "BLOODHOUND"

An All-Metal Two-Seater Fighter, with "Jupiter" Engine

MANY interesting features are incorporated in the design and construction of the Bristol "Bloodhound," one of the latest types to be produced by the Bristol Aeroplane Co., Ltd., of Filton, Bristol. Unfortunately, Air Ministry restrictions do not allow of referring to this machine in anything like as much detail as one could have wished, and in fact little may be said that is not fairly evident from an examination of the accompanying photographs.

The Bristol "Bloodhound" is mainly remarkable for two things, as regards general design. One is that it is an all-metal machine, with the exception of the covering; the other is the somewhat unusual wing form. With regard to the former it is not permissible to go into details concerning the particular form of metal construction employed, but as one would expect from a Bristol machine the "Bloodhound" is of very sturdy construction and of excellent workmanship.

Intended for reconnaissance or fighting, the "Bloodhound" is a two-seater tractor biplane with Bristol "Jupiter" engine. In order to provide a good view and field of fire for both pilot and gunner the wing arrangement is somewhat unusual, and incorporates a feature that has not, we believe, been seen on any modern machine, at any rate in such marked degree. We are referring to the sweep-back or "arrow" formation of the wings. The early German aeroplanes, it will be remembered, were often characterised by this feature, but of recent years the straight wing appears to have superseded the arrow type entirely in this country.

In France the arrow wing is still found on some machines, notably in the Spad-Herbemonts, in which the top plane is swept back, while the bottom plane is straight. In the early days the reason for adopting the arrow plan form was usually an attempt at obtaining stability, and those who were interested in flying during 1911-12 or so will remember one British machine, the Dunne, in which the angle of sweep-back was very pronounced, so much so that no tail was fitted, the ailerons, when operated together, performing the duties of an elevator. Nowadays designers obtain stability by other means, and when the arrow plan form is employed the reason is usually something other than stability. In the case of the Bristol "Bloodhound" the arrow formation was chosen in order to give the occupants a better view. The fact that both top and bottom planes are swept back has enabled both pilot and gunner to be placed aft of the wings, the former with his head in line with the chord line of the top centre section, and the latter aft of the trailing edge. Cut-outs in top and bottom trailing edges further improve the view, and it would be difficult to imagine a design of this type with smaller "blind areas" than has the "Bloodhound." Thus whether the machine is used as a two-seater fighter or as a reconnaissance machine the view is excellent and a free field obtained for guns, bombs or camera.

Apart from the sweep-back of the planes, the wing structure is unusual, inasmuch as the system of bracing adopted is one in which there is no wire bracing in the inner bay. Top and bottom centre sections are joined by streamline steel tube struts, and the lift is taken by two relatively short struts on each side, running to the fuselage. The inter-plane struts are steadied by short horizontal struts to the fuselage. The outer bay is of orthodox form, with streamline wire bracing.

The undercarriage is remarkable for the very wide wheel track. This is obtained by attaching the undercarriage vees to the lower plane centre-section, the axles being hinged under the floor of the fuselage. The shock-absorbing gear is in the form of steel springs and oil damper, so that when the machine is used in tropical countries there is no rubber to require attention and frequent renewal. The landing loads are, of course, transmitted to the fuselage by the short sloping struts.

The Bristol "Jupiter" engine is partly cowled-in, but it will be observed that no spinner is fitted over the propeller boss. The fuselage covering just behind the engine is aluminium, but for the rest of the machine fabric covering is used. 104 gallons of petrol are carried, the petrol system including centrifugal pumps, a hand-operated pump and a gravity tank. The oil tank contains 15 gallons. The armament includes two Vickers' machine guns with CC gear, for the pilot, and one Lewis gun for the gunner, whilst there is stowage space for 1,600 rounds of ammunition for the Vickers gun and seven double ammunition drums for the gunner. Fittings are also provided for the carriage of bombs, electrical generator and accumulators, the necessary identification and landing lights, Verey pistol and ammunition, oxygen apparatus, fire extinguishers and instrument-board lighting.

All control surfaces are balanced, the elevator and rudder by horn balances and the ailerons by being pivoted some little distance behind their leading edge, so that the machine is exceptionally light and powerful on her controls. It is regretted that performance figures may not be published, nor any data relating to the weight and load of the machine, but the Bristol "Bloodhound" combines a very good performance with her free field of vision, and should be a valuable addition to any country's service machines.

A Gold-Fields Air Service

IN a special *Financial Times* article on June 16, dealing with Canadian industry, reference is made to the air service which has been established from Angliers, Quebec, to the new gold-mining area in north-western Quebec, which it is claimed is the first in the world. It is not yet possible, the article states, to estimate with any degree of accuracy the relative importance to the mining industry of transporation by air. The directors of Laurentide Air Service, under whose auspices the enterprise has been initiated, are fully conversant with the results of commercial flying on this side of the Atlantic, and have gained a local knowledge in the service for the forestry departments of Ontario and Quebec.

The chief difficulty with which prospectors and mining men in a new district have to contend is transportation. Up to the time a railway is made available, the larger part of the time and money used are consumed in transporting men and supplies to the scene of action. Again, a large fraction, if not the major part, of a prospector's time during the season is consumed in travelling to and fro, and consequently is lost for useful work. He likewise often wastes a large part of his time because the area has not been mapped out. At the present rate of progress, it will take years to produce a good detailed map of the 100-mile gold belt of north-western Quebec. Aerial photographs would gather the data required within a few days, and within a couple of months, with Government co-operation, this could be made into an accurate map, by means of which not only prospectors but Government geologists could direct their efforts with a degree of precision and economy of time at present impossible.

If it should prove to be commercially feasible, it will at once bring within easy reach a vast extent of unexplored territory, and will hasten to a marked degree the mineral development of this promising region.

An Aerial Pageant at Kenley

AN Aerial Pageant on a small but none the less complete scale was held at Kenley Aerodrome on Monday last. It was organised by an arrangement between the Air Ministry and the Empire Press Union for the benefit of members of the Canadian Weekly Newspaper Association, and about 170 of the members witnessed the demonstrations of flying. Kenley, the home of No. 24 Squadron and the headquarters of No. 6 Group, is well known for its high standard in the various flying duties the station is called upon to carry out; it is, therefore, hardly necessary to state that some very fine flying was witnessed on the occasion under review.

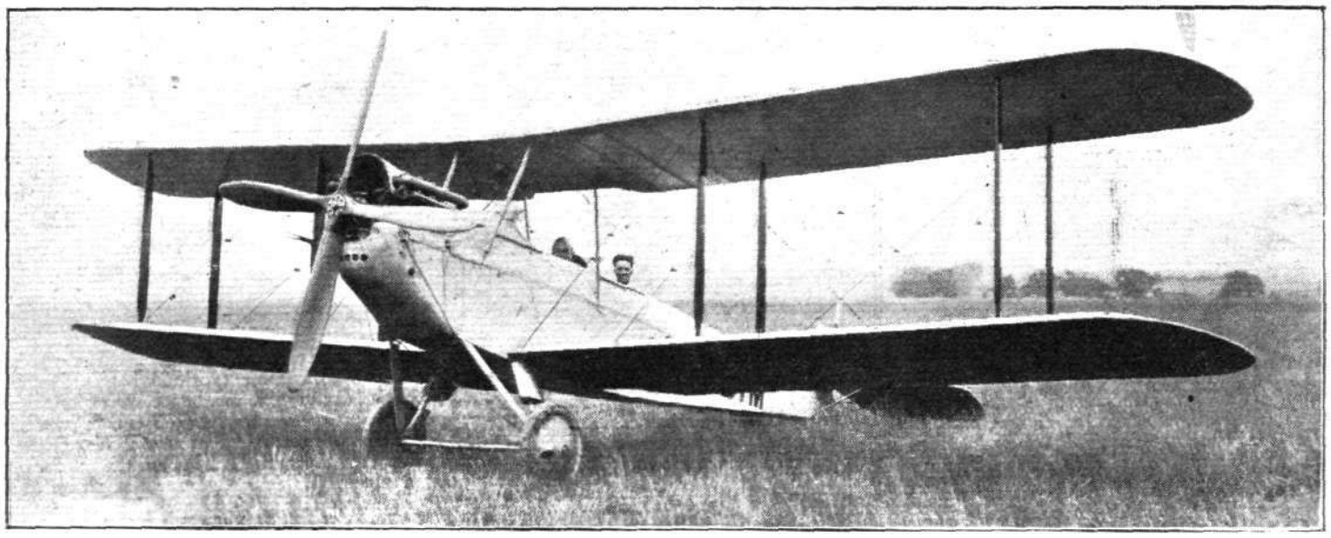
The visitors were received by Air-Commodore C. R. Samson, Officer Commanding the Group, and after a tour of inspection of the aerodrome, Flying-Officer Shepheard gave a splendid exhibition of aerobatics in spite of a somewhat tricky wind. A fighting unit of three Bristol Fighters took part in an aerial "dog fight" with three Siddeley "Siskin-5" single-seaters—a new type not seen in public before. Five single-seater Sopwith "Snipes" from No. 25 Squadron (Hawkinge) gave a demonstration of low-altitude attack, bombing a submarine (made from scrap material) which "lay-to" in the centre of the aerodrome, and attacking from different directions. Another item which created some considerable enthusiasm and amusement—and which was missed very much at this year's Pageant at Hendon—was a demonstration of crazy flying by F.-O. Leslie Hamilton on the hardy Avro. Altogether over 30 aeroplanes took part, including two commercial machines—a Handley Page "W.8 F", three-engined 'bus (2 Siddeley "Pumas" and 1 Rolls-Royce "Eagle IX"), and the new D.H. 51 2-seater biplane (R.A.F. engine) described elsewhere in this issue. Practically all the visitors made flights in various machines, some in the Handley Page, and some in Vickers "Vimeys."

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

THE DE HAVILLAND TYPE D.H.51

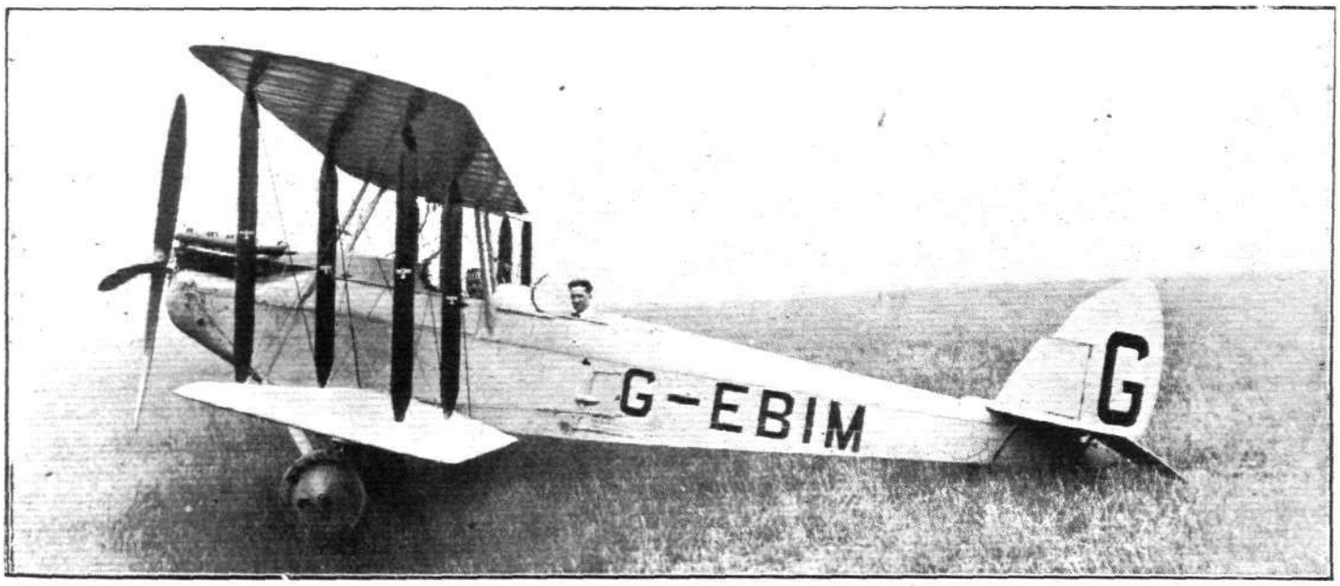
A Two-Three-Seater Biplane of Low Cost and Economical in Running

Low power, reasonable cost, economy in operation, and good performance; these were the features aimed at in the design of the latest machine to be produced by the De Havilland Aircraft Co., Ltd., of Stag Lane, Edgware, Middlesex. The D.H. 51 is not, and this is significant, a light 'plane in the sense in which the term is now used in this country. It is a machine of low power, certainly, compared with service machines and other high-power craft of modern times, but its engine power is such as to give an excellent performance, while the wing area is sufficient to reduce the landing speed approximately to that of many light 'planes. The machine is naturally more expensive to buy than a light 'plane of 30 h.p. or so, but on the other hand it is not as much more costly as one might imagine, and it will carry three without being in any way overloaded. Add to this the fact that at cruising speed the engine is only running at about 60 per cent. of its full power, and it will be seen that the reliability should be all that can reasonably be expected. As an owner-pilot's machine the D.H. 51 should appeal by the fact that it will carry one passenger and a considerable amount of luggage, or two passengers without a great deal of luggage. The ease with which the machine can be flown, and its stability and controllability, should enable a pilot of only average skill to use the D.H. 51 for cross-country work with perfect safety. The landing speed is so low as to enable the machine to be brought down almost anywhere, while the power reserve is such as to give an ample margin for climb out of a small field. In this latter respect the D.H. 51 certainly appears to score over the light 'plane, which, with its ultra low-power engine, will scarcely have a climb of more than about 300 ft./min., while the ground rate of climb of the D.H. 51 is about 580 ft./min.

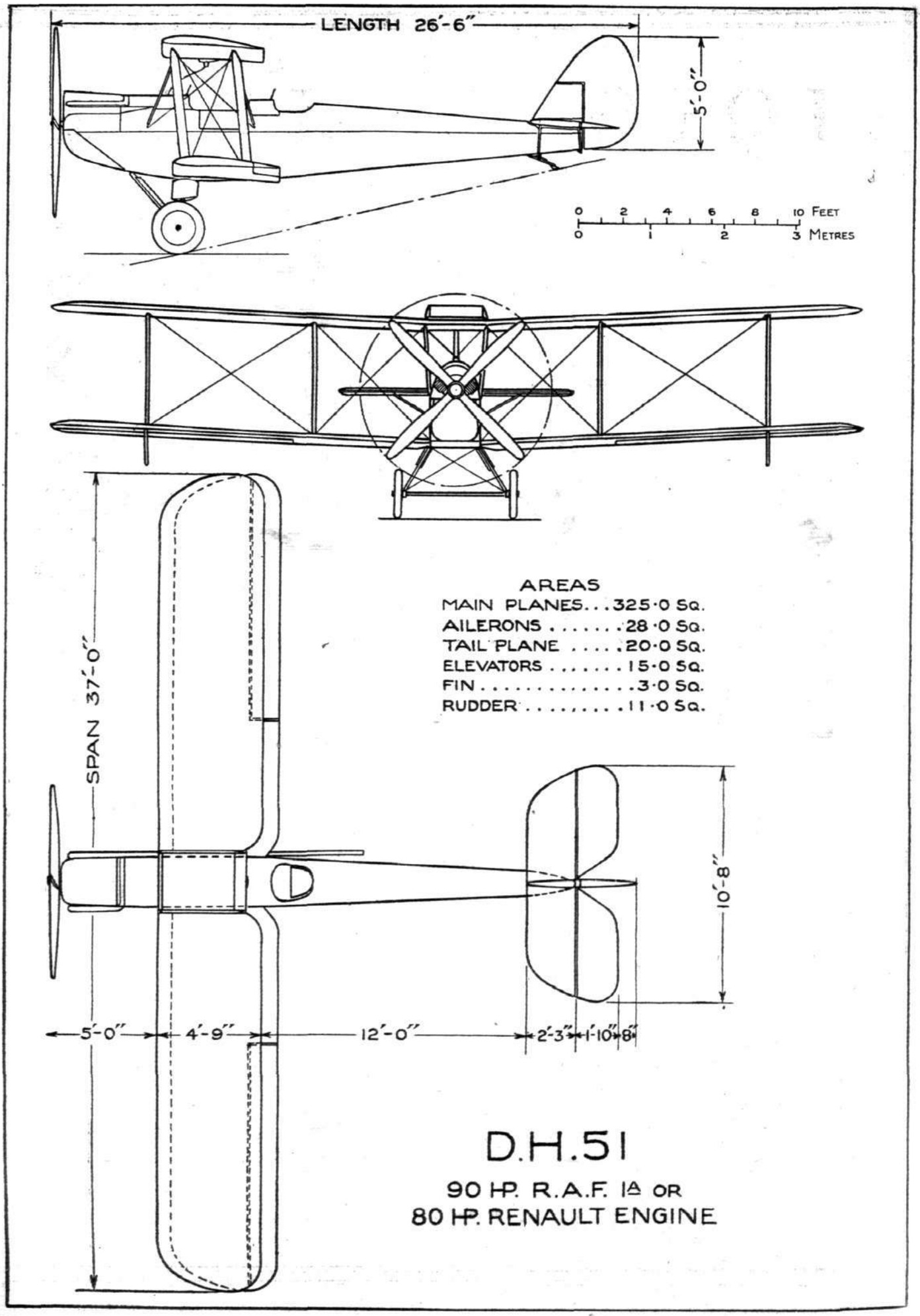


THE D.H. 51 BIPLANE: Three-quarter front view.

The power plant provided is either a 90 h.p. R.A.F. 1A or an 80 h.p. Renault, both 8-cylinder air-cooled engines. The engine fitted in the first type, illustrated herewith, is the R.A.F. 1A. In this connection a somewhat curious state of affairs seems to exist. The R.A.F. 1A engine is not, it appears rated by the Air Ministry as an airworthy engine, having plain single ignition. In order to improve the reliability and to make the engine conform to modern requirements the De Havilland Aircraft Co. have fitted the engine with Remy coil ignition in addition to the standard magneto ignition system. In the view of the Air Ministry, however, this constitutes a change in the engine, and a 10-hour run is insisted upon. The Air Ministry at first wanted the engine to be run on the ground for 10 hours, but it was pointed out to them

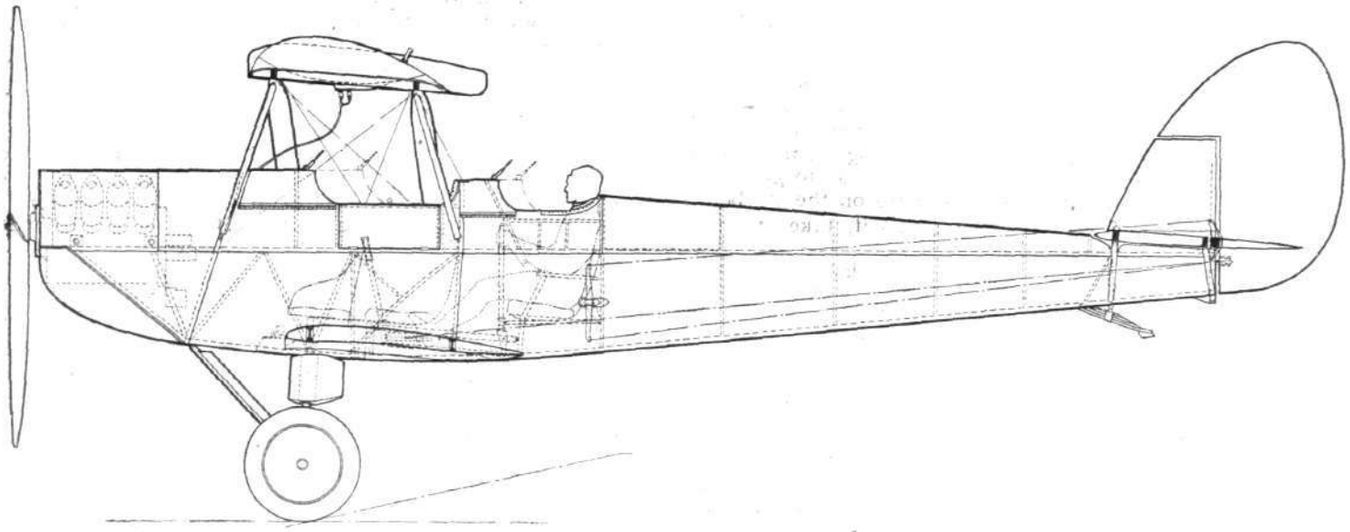


THE D.H. 51 BIPLANE: Side view.



THE D.H. 51 BIPLANE: Plan, side and front elevations to scale.

that if this were attempted the engine would probably melt. As a special concession the Air Ministry has now agreed to accept a 10-hours' flying test around the Stag Lane aerodrome as proof of the engine's "worthiness." Now it is quite conceivable that in such a test something may go wrong with the engine, something which has nothing whatever to do with the addition of the second ignition system, but the De Havilland Aircraft Co. must bear the blame if anything goes wrong, and must try again until the 10-hour run has been successfully completed. At the best it will probably cost the firm

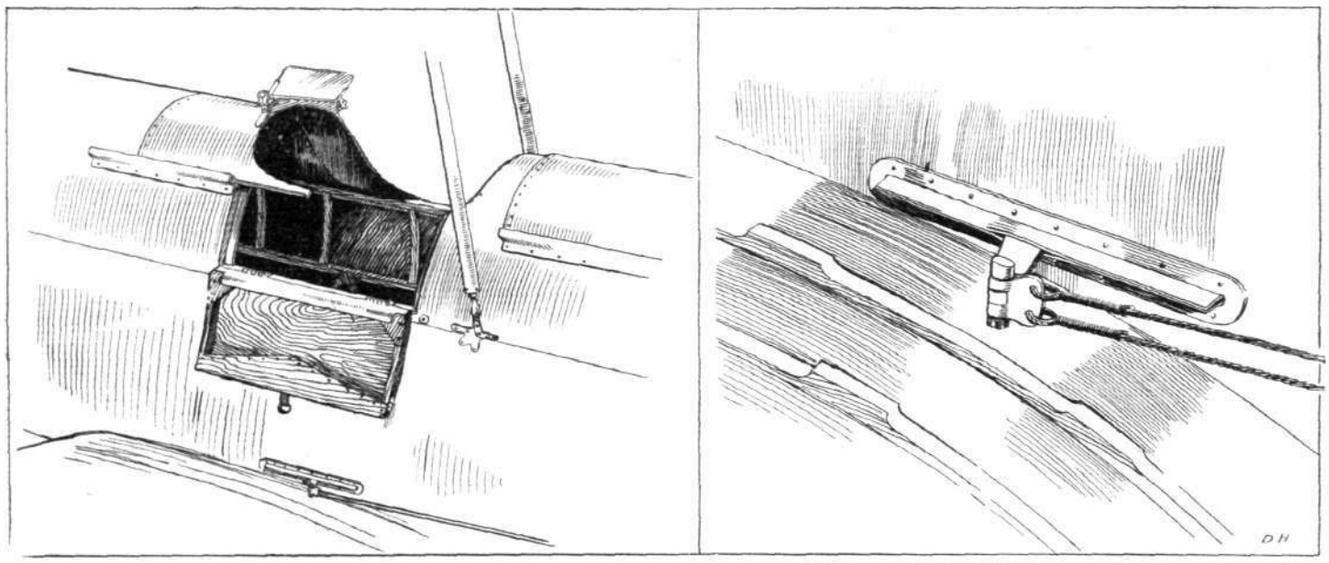


Side elevation of the D.H. 51 showing arrangement of cockpits, seats, controls, &c.

£100 or so to get the engine passed, which, in view of the fact that the De Havilland Co. has no proprietary interest in the engine, seems rather unfair, to say the least. Incidentally, the official distrust of an engine that was produced at the Royal Aircraft Establishment is not without its humorous side. In the meantime the D.H. 51 is not allowed to go more than 3 miles away from its aerodrome. And, of course, if and when the engine does obtain its certificate, no private owner-pilot will be able to fly his machine unless he has a ground engineer qualified for this particular engine. As there are large numbers of these engines to be obtained at low cost, it might have been thought that here was a good opportunity for producing low-priced machines of really good performance, but if all these restrictions are to be applied the cost will soon go up to such an extent that no machine can be produced at a price that is likely to appeal to more than a very few wealthy sportsmen. Thus once more the Air Ministry has provided an example of the "encouragement" which it is anxious to extend to people wishing to popularise flying. Truly we are a long-suffering race.

The D.H.51 is an orthodox tractor biplane of typical de Havilland appearance, and standard de Havilland practice has been followed in its construction. The fuselage is the usual plywood covered structure with flat sides and bottom and curved deck fairing. A very neat feature of the cockpit arrangements are the sliding fairings carrying the wind screens. One of our sketches shows the front cockpit, with the fairing pulled back and the "door" swung open so as to facilitat access to the cockpit. In the case of the front cockpit th object of the sliding fairing is, of course, to allow two pa sengers to be carried, while the pilot's fairing has a muc smaller movement and is intended to be adjustable to the most comfortable position. The D.H. sliding cockpit fairing is just one of those obvious things which nobody thinks of, and which are yet extremely useful and practical.

The R.A.F. 1A engine is mounted on transverse tubular bearers, and rubber packing pieces are inserted between the tubular bearers and their lugs on the fuselage. It has been found that this mounting reduces to a minimum the vibration transmitted to the fuselage. The usual scoop is fitted above the engine, between the cylinder banks, but somehow the de Havilland designers have managed to design a nose that looks considerably neater than do the majority of machines fitted with this type of engine. The exhaust pipe from the port cylinders is taken right across the fuselage, behind the engine, to a very long pipe on the starboard side, which carries the gases from all cylinders well aft, and contributes in no small measure to the silence of the engine. A large-diameter four-bladed airscrew is fitted, the engine being, of course, of the geared type. The petrol system is of the direct gravity feed type, the petrol tank, of aerofoil section, being mounted in the top centre-section. The fuel is conducted to the engine



THE D.H. 51: On the left a sketch showing hinged door and sliding cockpit fairing. On the right the rubber-closed slot for the rudder bar.

by a " Petroflex " tube. The tank is divided into two compartments, the second of which contains but a small quantity of fuel. Thus when the main compartment begins to run dry, and the engine shows signs of faltering, the pilot knows that he has a certain quantity left in the second compartment, and can begin to look for a suitable landing ground. The quantity of petrol carried is 30 gallons, which should be sufficient for about 4½ hours' flying at cruising speed. It should be pointed out that a fireproof bulkhead is interposed between the engine and the fuselage, and as the petrol tank is well away from the engine the danger from fire should be very remote.

The wings of the D.H. 51 are of standard construction, and the section employed is a slightly modified R.A.F. 15. The structure is a two-bay biplane with streamline wire bracing, and the only unusual feature is the omission of the incidence bracing on the port side of the struts carrying the top centre-section. This bracing has been omitted so as to give easy access to the front cockpit, and the wires on the starboard side, *plus* those in the centre-section itself, take over the duties of the missing wires.

The undercarriage is of usual de Havilland type, with combined rubber and oleo shock-absorbing gear. The first shock is taken by the oil, and then the rubber blocks, working in compression, begin to take up the load, the oil being forced past its plunger and damping the recoil. The travel provided is not very long, but has been found in practice to be sufficient.

The control surfaces and controls are all of standard de Havilland type, the differential aileron control patented by this firm being incorporated. There is no tail trimming gear, but the elevator is spring-loaded so that by setting it any slight changes in trim due to varying loads can easily be taken care of.

In conclusion it may be pointed out that by careful structural design the tare weight of the D.H. 51 has been reduced to the very low figure of 1,312 lbs. As the machine carries three, and is not a particularly small machine, the wing area being 325 sq. ft., this figure is extremely good, yet adequate factors of safety are provided everywhere, so as to make the machine suitable for the rough handling usually associated with school work. The flying qualities are excellent, not only in the matter of performance but also as regards handling, and the D.H. 51 is exceptionally pleasant to fly.

The main dimensions, areas, etc., are given on the general arrangement drawings published on page 438. The figures of weight are as follows: Tare weight, 1,312 lbs.; fuel (30 gallons) and oil (3 gallons), 250 lbs.; useful load (including pilot), 678 lbs.; total loaded weight, 2,240 lbs.; wing loading 6·9 lbs./sq. ft.; power loading (at 90 b.h.p.), 24·9 lbs./h.p. Fitted with the R.A.F. 1A engine, and carrying pilot, one passenger, 50 lbs. of load, and with full tanks, the performance is approximately as follows: Maximum speed near ground, 94 m.p.h.; cruising speed at low altitude, about 80 m.p.h.; stalling speed, 36 m.p.h.; maximum speed at 7,150 ft., 89 m.p.h.; ground rate of climb, 580 ft./min.; rate of climb at 6,500 ft., 300 ft./min.; service ceiling, 11,000 ft.; absolute ceiling, 13,000 ft.

◈ ◈ ◈ ◈

IN PARLIAMENT

Iraq Air Operations

LIEUT.-COMMANDER KENWORTHY on June 30 asked the Secretary of State for the Colonies whether there has been any fighting or other disorder in Iraq since the present Government took office; whether His Majesty's Forces have been engaged, and, if so, on what occasions; whether any bombings by aircraft have taken place since the beginning of this year; if so, on how many and what occasions; and what was the fighting and air-raiding which recently took place at Sulimaniyah?

Mr. Leach: In answer to the first and second parts of the question, a few disturbances occurred in Iraq during the period mentioned. The only one of seriousness was that which took place at Kirkuk on the 4th May in the circumstances explained by my right hon. friend the Secretary of State for the Colonies in his reply on May 12 to the hon. Member for Kidderminster. There were slight disturbances at the end of March in the Sulimaniyah region, where a chief defied the Iraq Government, but withdrew after air action on a small scale had been taken. There has also been some unrest in the Afaj district, where three native policemen were killed on April 25. Slight air action was then taken, and the leaders of the offending tribes surrendered. As regards the last part of the question, an effort was made by a disaffected chief to stir up trouble following the Kirkuk incident. No fighting took place, but as the chief refused to surrender, his headquarters were bombed after a warning had been given. The situation there again has since been normal.

Lieut.-Commander Kenworthy: What does the hon. member mean by " slight air action "?

Mr. Leach: Possibly one aeroplane not dropping any bombs, but merely warning notices.

Lieut.-Colonel Sir S. Hoare: Is not the hon. member carrying out identically the same policy as that which we carried out in this respect, and does he now repudiate the statements made by hon. members behind him against the policy which we carried out?

Mr. Leach: We communicated with our military and air headquarters in Iraq in regard to the whole situation of bombing operations, and I cannot honestly say that we have made any change in the policy of the late Government.

Lieut.-Commander Kenworthy: Will the hon. gentleman, when he tells us of the possibility of air warnings, tell us that no bombing has taken place in any of these operations and that there have been no casualties?

Mr. Leach: No, I cannot say that no bombing has taken place, but to the best of our information no casualties have taken place.

Southampton to Cherbourg Seaplane Service

LORD APSLEY, on July 3, asked the Under-Secretary of State for Air whether negotiations with the French authorities are nearing completion with regard to a proposed seaplane service from Southampton to Cherbourg and various French seaside resorts; and if he is in a position to state when the service will be commenced?

Mr. Leach: The preliminary negotiations which had been opened with the French authorities in regard to the establishment of a seaplane service from Southampton to Cherbourg and other French ports were not brought to a conclusion because, in view of the experimental nature of the employment of this type of aircraft on regular air transport services, it was considered necessary to confine operations in the first instance to the Southampton-Guernsey service. Valuable experience is being gained on the latter route, but I am not in a position to state whether the services referred to in the noble lord's question will be commenced, the decision in regard to this resting primarily with the directors of Imperial Airways, Ltd.

Lord Apsley: Is the hon. gentleman aware that experiments have been going on for over a year which have proved eminently satisfactory; and in view of the great demand on both sides of the Channel for a passenger and mails service between Cherbourg and Southampton and also to the French holiday resorts before the holiday season is over, will he take any steps to see that the matter is expedited as much as possible?

Mr. Leach: I can only hope that the Imperial Airways, Ltd., will take notice of what the noble lord has said and carry out his suggestion.

Captain Brass: If these services are instituted will a subsidy be given to the company?

Mr. Leach: The subsidy scheme has already been arranged and would certainly not be interfered with.

R.A.F. Aerodrome, Cardington

MR. WELLS asked the Under-Secretary of State for Air what additional employment has been created at Cardington due to the decision of the Government to re-open the aerodrome; and does he propose to give, as far as possible, preference for work to those unemployed living in the district?

Mr. Leach: In answer to the first part of the question, the number of workmen for whom employment will be created is unlikely to exceed 50 in the first six months, or 150 in the first year; the answer to the second part is in the affirmative.

Major Colfox: Will a preference be given to unemployed ex-service men?

Mr. Leach: Yes, if they are competent.

Bombing Operations, Iraq

MR. LANSBURY asked the Under-Secretary of State for Air (1) whether he can give the House the total number of casualties suffered by the British Air Force during bombing operations carried on in Iraq or elsewhere during the past five months, and the total casualties suffered by the people living in the various places against which these operations have taken place;

(2) on how many occasions during the past five months has the Air Force been engaged in Iraq or other places bombing undefended villages or townships; and whether any notice, and, if any, what length of notice, is given to the civilian population—women, children and men—to withdraw before the bombing commences?

Mr. Leach: Bombs have been dropped on five occasions in Iraq during the period referred to, and in all cases except one not less than two days' warning was given to enable the inhabitants to withdraw. The objectives selected were the encampments and grazing grounds of the offending tribes. The case where no warning was given was one of an attack by tribes on native police, in which one police officer and three police were killed. In this period there have been no casualties to the Royal Air Force in Iraq during bombing operations. As regards casualties inflicted by the operations, none have been reported to Air Headquarters. My hon. friend will realise that in areas where violence is habitual, air action, however regrettable the necessity for it, in many cases, checks at an early stage disturbances which would otherwise cause great loss of life. In this connection, I may mention that a frontier tribe, of the same type as those which the hon. member has, apparently, in mind, recently killed 146 men and 127 women and children during a single raid into Iraq territory, in the course of which all the male prisoners and wounded, both men and boys, were put to death. The offending tribe escaped back over the borders before operations could be taken by us against them, but it is also the fact that this kind of raid, with its consequent loss of life, has been almost entirely abolished by the measures taken by the Air Force.

R.A.F. Night Flying

SIR F. SYKES asked the Under-Secretary of State for Air whether a series of night-flying tests has been carried out on the Cairo–Baghdad air route or in other tropical or semi-tropical areas; if, so, whether regular night flying under such climatic and atmospheric conditions is considered to be practicable; if the conclusions derived from such tests have been communicated to the Dominion and Indian Governments; and, if such tests have not been carried out, whether, in view of the great importance of night flying, they will be put in hand at the earliest possible date?

Mr. Leach: There is no present intention of operating the Cairo-Baghdad air route by night, but night flying is carried out as a regular part of the training of the air squadrons in the Middle East generally and in India. Any data derived from the experience of the squadrons in those areas are at the disposal of the Dominion Governments.

◈ ◈

Western Australian Airways' Director coming to England

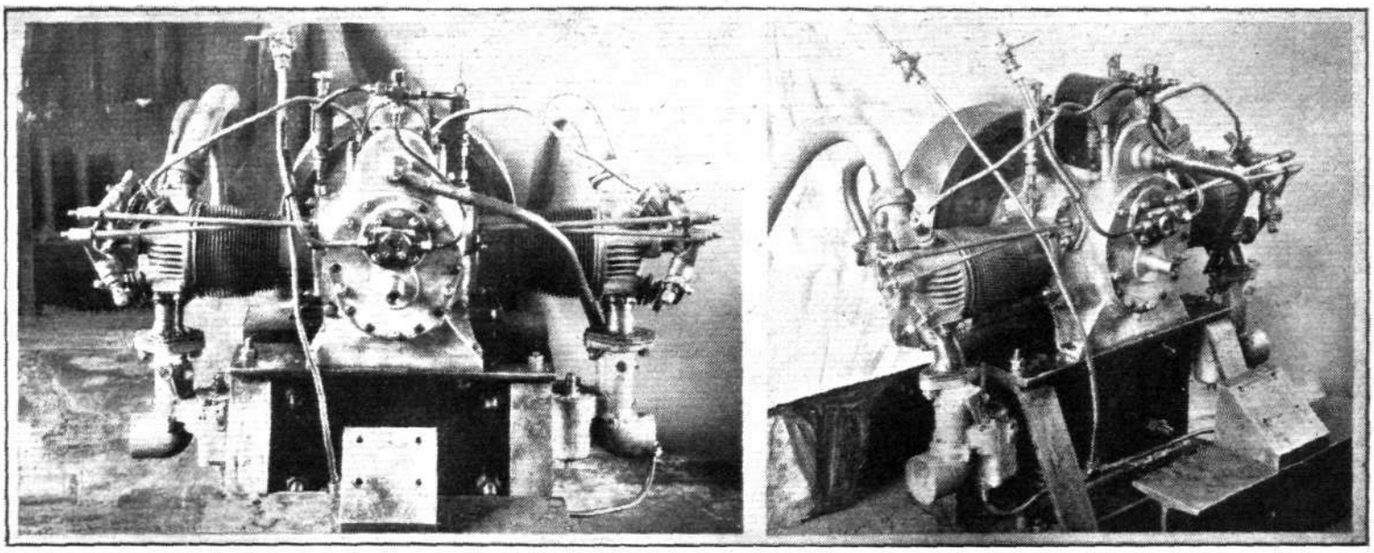
MAJOR N. BREARLEY, managing director of Western Australian Airways, Ltd., is due to arrive in England this month on a business trip, and intends remaining for several weeks. He will be enquiring into many things connected with aviation matters, and hopes to again meet many of his War-time aviation friends. His London address will be: Care of the Agent-General for Western Australia, Savoy House, Strand.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

THE A.B.C. "SCORPION"

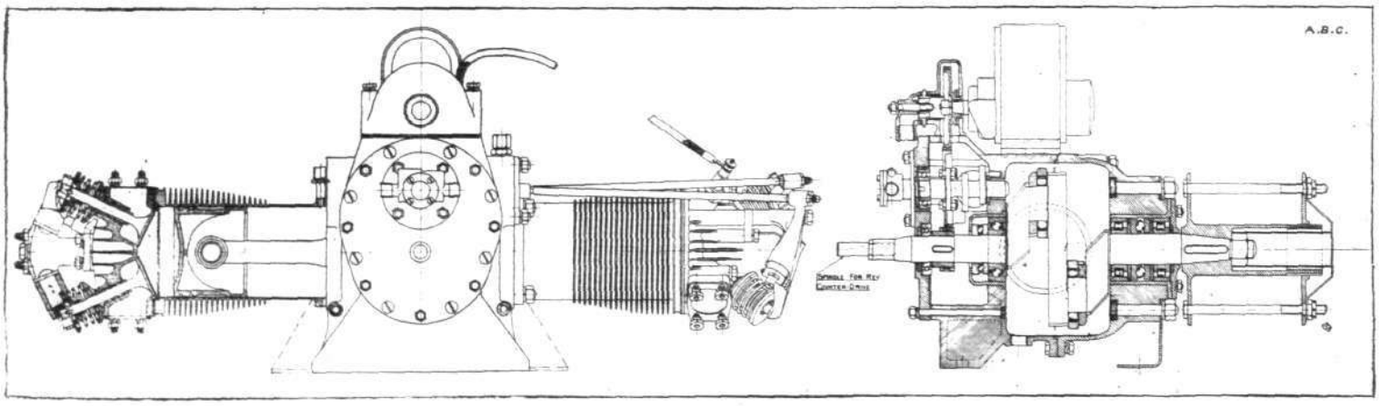
A "Flat-Twin" Suitable for Light 'Planes

IN spite of the excellent results obtained with the English Electric Company's "Wren" in last year's Light 'Plane Competitions, few other aircraft designers have made any attempt to provide a really low-power machine. The "Wren," it will be remembered, was fitted with a 400 c.c. A.B.C. engine, which gave very good service during the week at Lympne, but the type is perhaps too small to be likely ever to become popular for aircraft use. Similar in all essential respects to the 400 c.c. type is the A.B.C. car engine, except that it is, of course, of very much greater capacity. The actual car engine is, we believe, of something like 1,200 c.c. capacity, and is therefore outside the limits fixed for this year's Light 'Plane Competitions at Lympne. By a very small modification, however, A.B.C. Motors of Walton-on-Thames have reduced the cubic capacity of the car engine until it falls within the 1,100 c.c. limit. This has been done by slightly decreasing the bore, and in all other respects the A.B.C. "Scorpion" is similar to the standard car engine. As the latter has given excellent service when fitted in the A.B.C. car, there does not appear to be any reason why its modified version should not be quite well suited for installation in light 'planes, and a visit to the A.B.C. works at Walton a short time ago enabled us to observe one of these engines on the test bench, undergoing its preliminary tests. From the behaviour of the engine we certainly came to the conclusion that there was no apparent reason why the "Scorpion" should not behave as well in the air as it has done on the road, and designers looking round for a power-plant for this year's competitions, or for machines for private use, are advised to give the A.B.C. "Scorpion" careful consideration. As the A.B.C. car engine will already be fairly well known, we will confine ourselves to quite a brief description of its main features, and will follow up by pointing out the very small changes, apart from the reduction in bore, which have been necessary in order to convert the "Scorpion" from a car engine into a light 'plane power-plant.

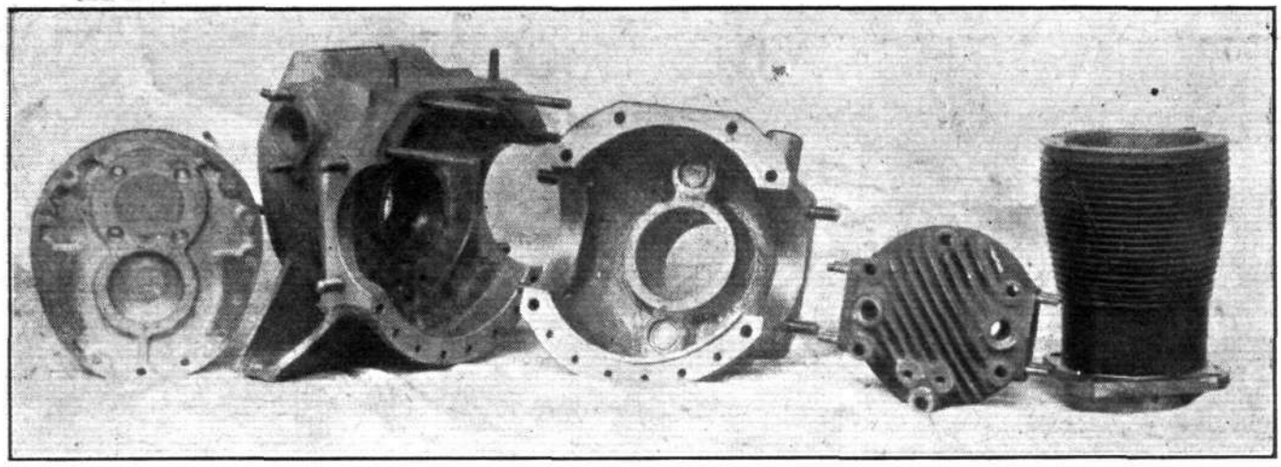


Three-quarter rear view and rear view of the A.B.C. "Scorpion" light 'plane engine on the test bench. Note that two carburettors are fitted. When actually mounted in an aeroplane the flywheel will be replaced by the airscrew, and the exhaust pipes will, of course, be taken upwards and backwards, clear of propeller and cowling. Also the two carburettors will be brought closer together near the centre, but the test bed did not allow of doing this for the initial experiments.

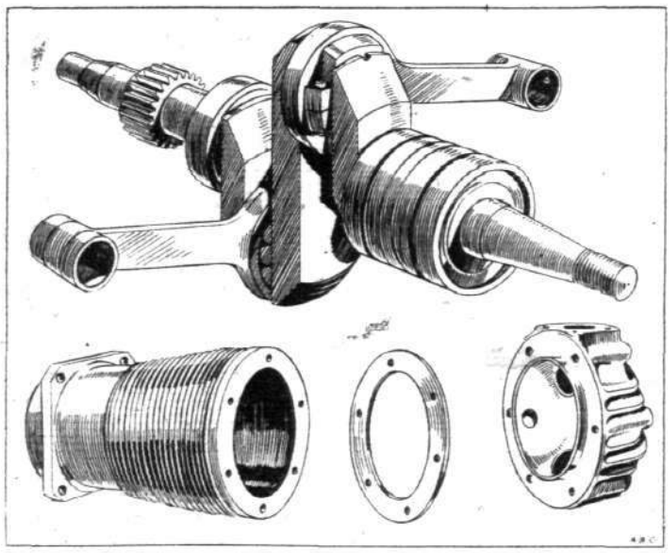
The A.B.C. "Scorpion" is a two-cylinder opposed air-cooled engine with a bore of 3·435 ins. and a stroke of 3·6 ins. (87·5 mm. by 91·5 mm.). The aluminium crank-case is divided laterally, a spigoted joint being used as shown in the accompanying photograph and sectional drawings. The two-throw crank-shaft runs in ball bearings at the back and in roller bearings at the front. In the case of the light 'plane engine a thrust bearing has been interposed between the two roller bearings in front, so as to take the thrust of the propeller. A short camshaft runs in one plain bearing and one ball bearing housed in the back of the crank-case, and the rear plate cover respectively, and operates the overhead valves through push-rods and rockers. When used as a light 'plane engine the engine is reversed in the sense that what is the back of the engine when used in a car becomes the front, and the large flywheel with which the car engine is fitted (and which is shown in place in the photograph of the engine on the test bench published herewith) is removed and replaced by a special propeller boss made to fit the flywheel taper on the end of the crankshaft, the propeller of course taking over to a large extent the duties of the flywheel. The rear end of the crankshaft projects through the back cover, and affords a



Sectional views of the A.B.C. "Scorpion" light 'plane engine.



SOME COMPONENTS OF THE A.B.C. "SCORPION" LIGHT 'PLANE ENGINE: On the left the two halves of the crank-case and the back cover. On the right a cylinder and detachable cylinder head.

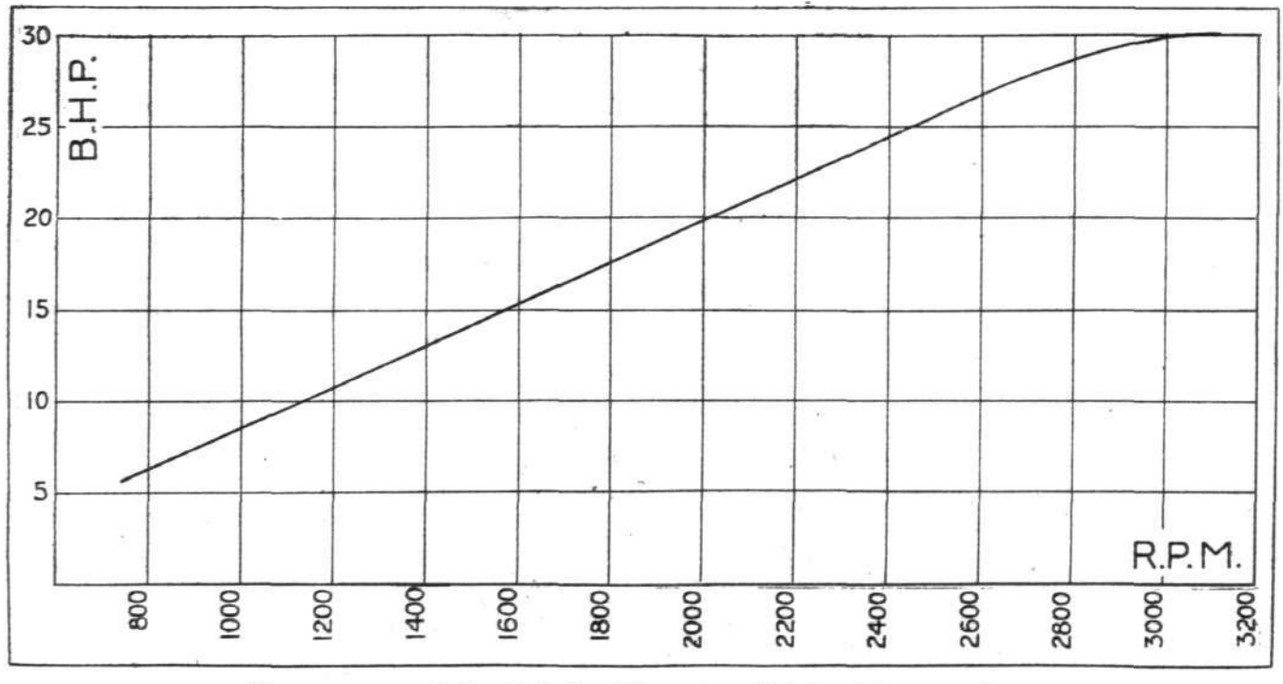


THE A.B.C. "SCORPION": Above, a sketch of the connecting rod assembly. The big-ends are threaded over the crank webs, the rollers inserted, and the whole locked in place by a split washer. Below, sketches of a cylinder, cylinder head and copper-asbestos packing ring.

of the engine, as well as in the sectional drawing on p. 441. The cylinders have detachable heads, containing the overhead valves and valve gear, and the heads, it will be seen, are generously ribbed, so as to provide good cooling. It should be observed that the cylinder heads are quite symmetrical, with the exception of the hole for the sparking plug, of which only one is fitted per cylinder. The inlet and exhaust valves are identical in size and shape, a fact which has been largely responsible for the ease with which the engine can be converted into a light 'plane power-plant. This is accomplished in the very ingenious manner first employed by Mr. Manning on the small 400 c.c. A.B.C. engines fitted in the "Wren" monoplanes. As fitted in a car, the inlet valves are on top and near the flywheel end of the engine, while the exhaust valves are at the bottom. For use in an aeroplane this arrangement is scarcely suitable, as the induction pipes would have to have a very sharp bend in them in order to miss the propeller. Also the high position of the carburettor would be rather against employing direct gravity feed. By the very simple expedient of changing over the exhaust and inlet pipes, and crossing over the push-rods, the inlet valves become exhaust valves and *vice versa*. This had been done in the engine which we examined, and certainly did not appear to make the slightest difference to the running of the engine.

We saw the engine started from cold without any difficulty on the brake, and speeded up to about 3,100 r.p.m. straight away. We understand that prolonged tests at about 90 per cent. of the full power have been carried out, and that no trouble has been experienced.

From the photographs it will be seen that two carburettors



Power curve of the A.B.C. "Scorpion" light 'plane engine.

convenient means of driving the revs. counter. Forced lubrication is employed, the oil pump being mounted on the back cover of the crankcase, and is visible in the photographs

have been fitted, as it has been found that by so doing the engine can be made to develop considerably more power. Should aircraft designers prefer to fit only one carburettor,

FLIGHT

with the usual forked induction pipes, this can, of course, easily be accomplished. The pistons are of aluminium alloy and of very simple design.

It will be obvious from the foregoing that the changes necessary to convert the "Scorpion" into a light 'plane engine are so small that there is no reason to suppose they will in any way affect the running of the engine, and aircraft designers deciding upon this engine will have the satisfaction of knowing that they are not buying an experiment as regards the engine itself, but a type which already has several years' actual practical use behind it. That the conditions obtaining in a light 'plane are rather more searching in one way, although perhaps easier in others, may be admitted, but there does not seem to be any reason for thinking that the engine will not behave quite satisfactorily in a light 'plane. At any rate the type seems well worth trying, and the fact that considerable numbers are already in existence and that *A.B.C. Motors can give delivery at once* of something like a dozen engines should be a point in their favour and is a fact not to be overlooked. From the accompanying power curves it will be seen that at about 3,100 r.p.m. the power developed is about 30 b.h.p. No data are available as regards the fuel consumption, but as this is not taken into consideration in the forthcoming competitions, it is scarcely a matter of great importance. In any case it is not likely that the fuel consumption is excessive, as the compression ratio is about 5 : 1. As regards weight, the engine weighs, complete with propeller boss, carburettors and magneto, about 92 lbs. The selling price of the A.B.C. "Scorpion" has not, we understand, been definitely settled, but it appears likely that the price will be in the neighbourhood of £80 or £85. All enquiries should be addressed to A.B.C. Motors, Ltd., Walton-on-Thames, who will, we understand, be pleased to show the engine running on the test bench and give all other information that may be desired by any aircraft designer contemplating the use of the "Scorpion."

◈ ◈ ◈ ◈

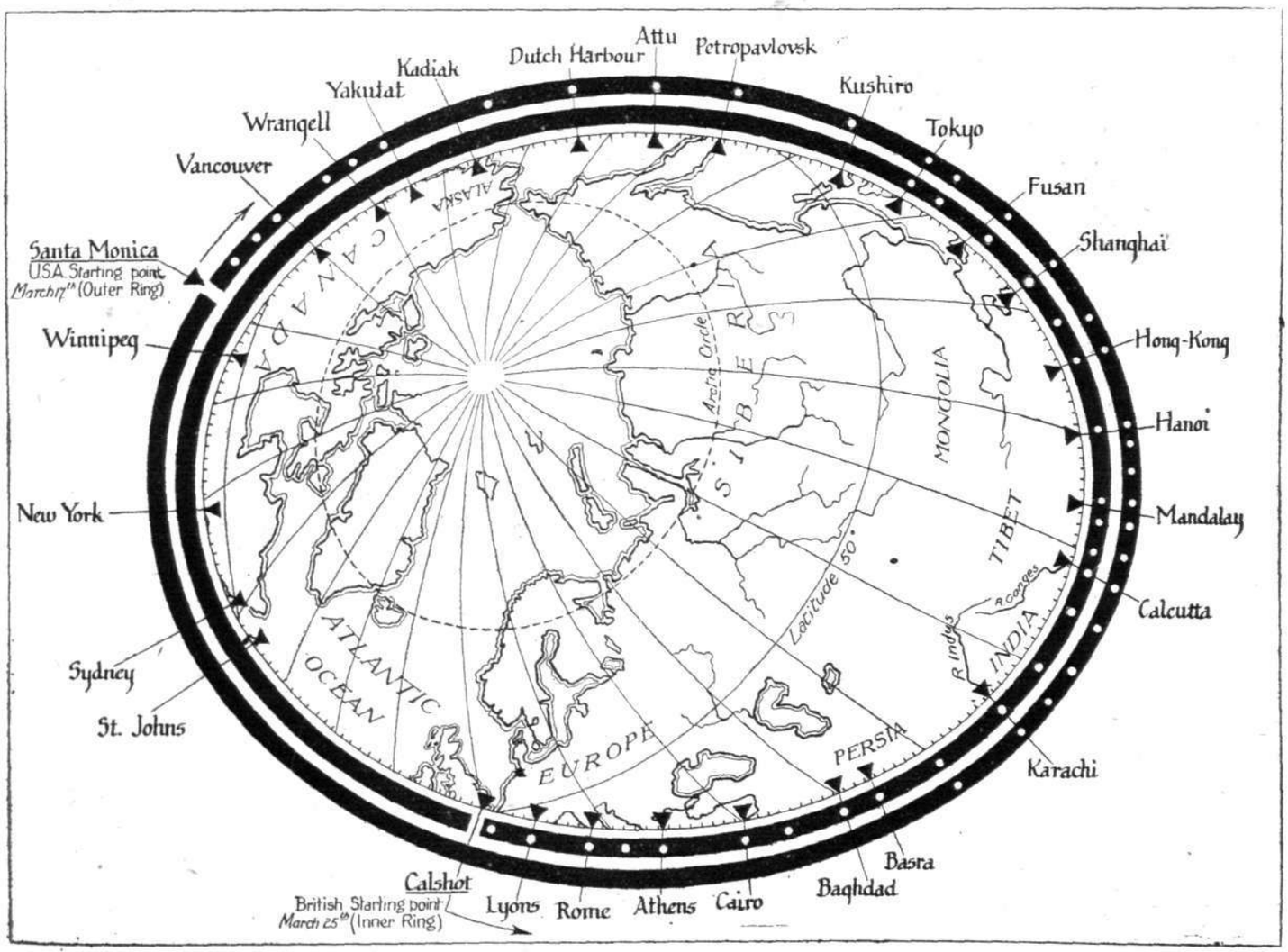
ROUND-THE-WORLD FLIGHTS

BOTH the British and the American World-Flyers have been steadily increasing the distance separating each other during the last week. The progress made by each team, also, has been very even, both having added about 2,100 odd miles to their respective mileages.

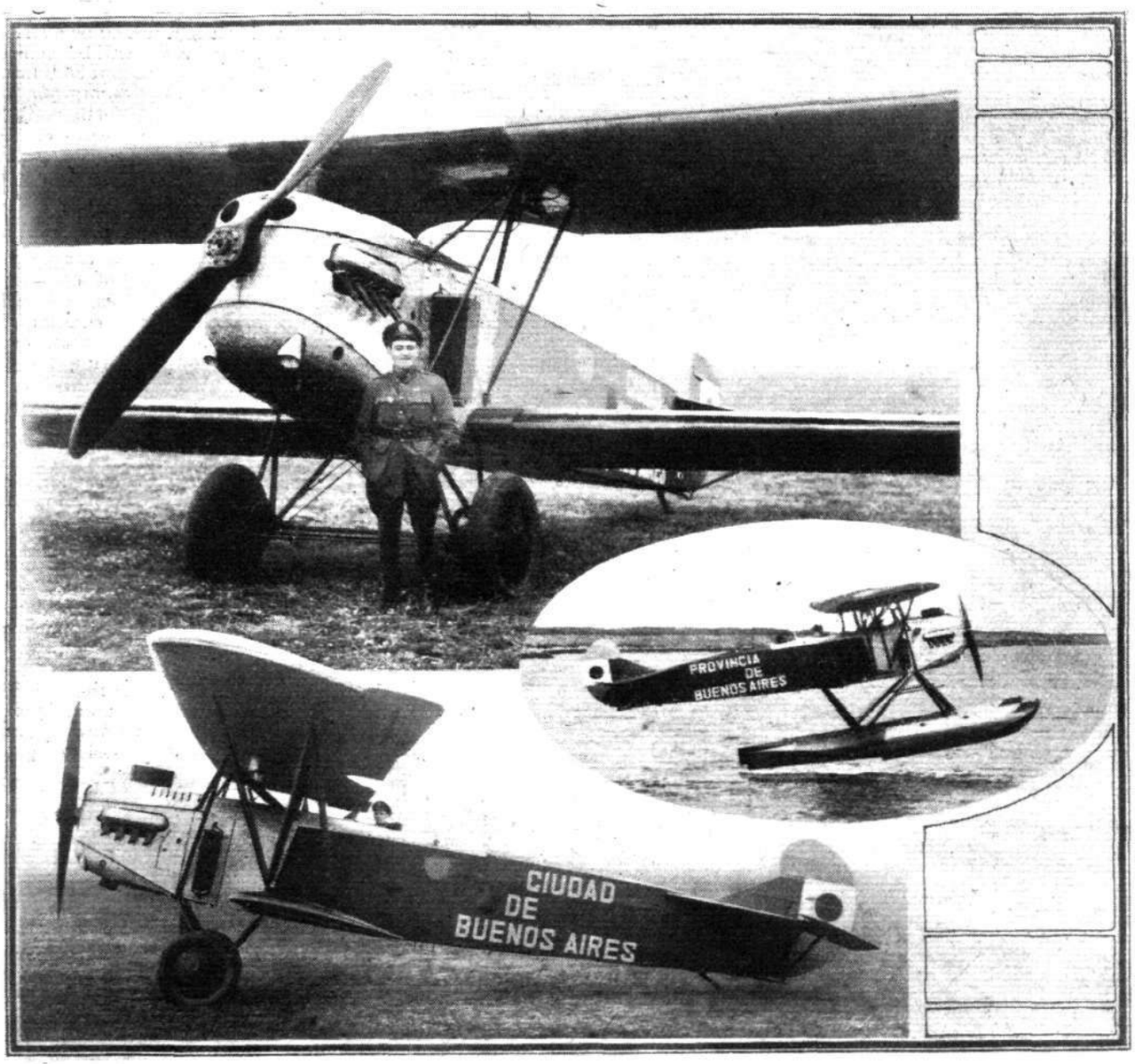
On the day following his arrival at Hong-Kong (*i.e.*, July 1), Squad.-Leader MacLaren and his companions, Flying-Officer Plenderleith and Sergt. Andrews, were entertained at luncheon at the Hong-Kong Club, and later dined at Government House, where they met Lieut. Pelletier d'Oisy. This, no doubt, welcome diversion over, they resumed their journey eastward the following morning (July 2), leaving Hong-Kong at 9.30 a.m. for Foochow, where they arrived without incident.

They left Foochow early next morning, and arrived at Shanghai after a 4½-hour journey in fair weather. Unfortunately, Sergt. Andrews fell ill on the journey, having received a heat-stroke while working on the machine at Hong-Kong, and had to be taken to the hospital at Shanghai. In the evening Squad.-Leader MacLaren and F./O. Plenderleith were invited to the Independence-Day Dance at the American Country Club. July 4 was spent in attending functions, etc., and the next day they left Shanghai for the 500-mile over-sea trip to Japan. This flight was successfully accomplished, and they arrived at Kagoshima at 5 p.m.

The journey was resumed the following morning at 7.50 a.m., their objective being Kushimoto. A few miles from here, however, they ran short of petrol and came down at Susami. A Japanese naval seaplane flew to their assistance with a



ROUND-THE-WORLD FLIGHTS: The direction followed by the Americans is clockwise (i.e., east to west), and that of the Vickers "Vulture" anti-clockwise (west to east). The Americans left Santa Monica, California, on March 17; the British crew left Calshot (Southampton Water) on March 25. Reports on Tuesday evening stated the Americans (except Major Martin) had reached Chahbar, while the British were at Tokyo.



ANOTHER ROUND-THE-WORLD FLIGHT? Major Pedro Zanni, of the Argentine Air Service, with his Fokker biplanes (450 h.p. Napier "Lion"), who is attempting an aerial round-the-world dash, starting and finishing at Amsterdam. He will be accompanied by Lieut. Nelson Page and Chief Engineer Beltrame, both of the Argentine Air Service.

supply of fuel. This delayed their arrival at Kushimoto by about three hours. The next stage, to Kasumigaura Aerodrome, Tokyo, was completed the following day, July 7, and they received an enthusiastic welcome on their arrival.

Squad.-Leader MacLaren has now covered 10,770 miles—nearly half-way round the world. He reports that the Vickers "Vulture" amphibian and the Napier "Lion" engine are in fine form.

While the Britishers were speeding eastward, the American team, consisting of Lieuts. Smith, Wade, and Nelson, were rapidly approaching Europe. Their Douglas World-Cruisers having had wheels substituted for floats at Calcutta, they resumed the next overland stage on July 1. After a fair trip, they arrived safely at Alahabad, where they stayed overnight, continuing their journey next day as far as Ambala. Here one of the engines was found to be suffering from a leaky cylinder, and so a new cylinder was dispatched by air from Lahore. The following morning (July 3) they proceeded from Ambala to Multan, where they arrived at 2 p.m.

The final stage of the trans-India journey was completed the next day, when an early departure was made from Multan for Karachi, which was reached without incident. They stayed at Karachi two days, and on July 7 they continued on their way, having received a hearty send-off from Karachi, and eventually arrived safely at Chahbar, on the Arabian Sea. The American team has completed 14,350 miles, and thus are little ahead of the British effort.

◈ ◈ ◈ ◈

THE ROYAL AIR FORCE.

London Gazette, June 24, 1924

General Duties Branch

Flying Officer H. P. Strong is placed on retired list on account of ill-health; June 25. Observer Officer J. F. H. Stevens is placed on retired list; June 25.

The following resign their short service commns. (June 25):—Flying Officer T. A. Verney-Cave; Pilot Officer R. E. Bath. Flying Officer Q. A. Kennedy (Lieut. R.G.A.) relinquishes his temp. commn. on return to Army duty; June 11. Flying Officer J. E. V. Lindsey (Lieut., Argyll and Sutherland Highrs.) to take rank and prec. as if his appt. as Flying Officer bore date Sept. 7, 1922. Reduction to take effect from May 30.

Medical Branch

Flying Officer V. S. Ewing, M.B., is promoted to rank of Flight Lieut.; June 21.

Princess Mary's Royal Air Force Nursing Service

Staff Nurse Miss E. D. L. Graham resigns her appt. as Staff Nurse; May 22.

Reserve of Air Force Officers

The following are granted commns. in Class A, General Duties Branch, as Flying Offrs. on probation (June 24):—A. Duguid, A.F.C., E. H. Du Heaume, A.F.C., E. F. Haselden, A. W. Higson, F. M. Kitto, M.C. Flying Offr. E. Marsden is transferred from Class C to Class B; June 24.

The following offrs. are promoted to ranks stated (June 24):—*Flying Offr. to be Sqdn. Leader.*—C. E. C. Rabagliati, M.C., A.F.C. *Flying Offrs. to be Flight Lieuts.*—H. Hemming, A.F.C., J. O. Groves, S. H. Gaskell, W. D. Thom, D.F.C., B. C. Rice, M.C., A. R. Boeree, A. N. Kingwill, A. F. Marlowe, L. Reynolds, T. A. Gladstone, A.F.C., P. A. F. Belton, A. C. Ferguson, F. G. Saunders, M.C., R. M. Clifford, J. L. N. Bennett-Baggs.

The following offrs. are confirmed in rank, with effect from the dates indicated:—*Flying Offr.*—H. P. Dean; May 29. *Pilot Offr.*—A. J. Black; June 1.

Memorandum

Pilot Offr. W. J. Root relinquishes his temp. commn. on ceasing to be employed; April 2.

FLIGHT
THE AIRCRAFT ENGINEER AND AIRSHIP

MILESTONES IN THE DEVELOPMENT OF THE METAL AIR-SCREW

THE following brief and scattered extracts, which have been submitted to us from the correspondence and other documents of the Metal Air-screw Co., Ltd., covering a period of seven years, will, perhaps, record in as few words as possible, the story of the progress made in the development of the metal air-screw during that time.

Starting with December 14, 1917, the Air Board wrote to Mr. Henry Leitner—who, in conjunction with Dr. Watts, is responsible for the production of the now famous Leitner-Watts metal air-screws—as follows :—

". . . The first propeller has now been spun with very satisfactory results. The propeller was designed to run at about 65 h.p., and was run at 75 h.p. for half an hour without showing any signs of fatigue, this is satisfactory when one remembers that the majority of metal propellers fail by fatigue at the root after about two minutes' run. . . ."

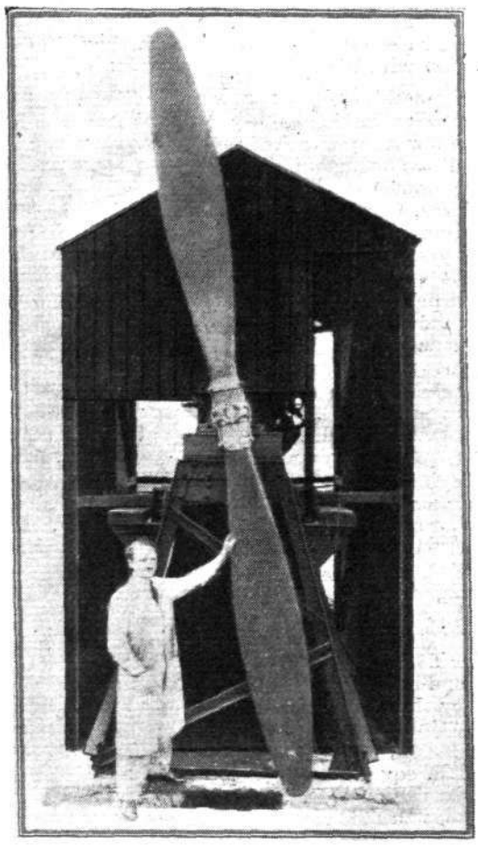
Then, in another letter from the Air Board, dated June 17, 1918, it is stated :—

". . . The first (metal propeller) ran for 30 hours at 1,150 r.p.m. on an engine mounted on a fuselage in the open ; the propeller was then examined and showed no signs of any cracks or opening joints. The result on the whole is very satisfactory. Technically, we may, therefore, say the proposition is proved. . . ."

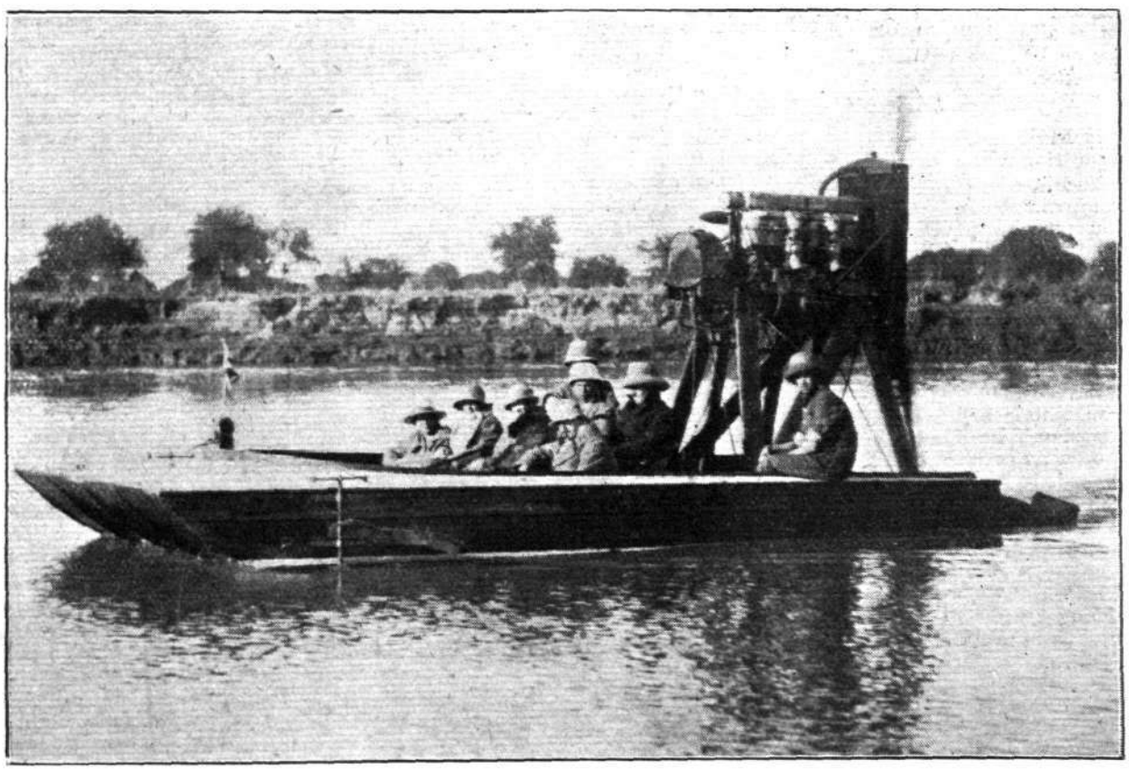
We then come to an extract from a letter to Mr. Leitner from the Ministry of Munitions of War, Air Group (Technical Dept.), dated August 21, 1918, which runs as follows :—

" The other of the two propellers which had run a 30-hours' test, was spun at Farnborough ; it was run up to 1,635 r.p.m., at which speed it was absorbing 340 h.p. This power being the limit which could be obtained at the Royal Aircraft Establishment, we were unable to carry out our intention of breaking the propeller."

The following year, in 1919, the Metal Air-screw Co. was incorporated, and commenced operations in 1920, when a considerable amount of research work was carried out, mainly in connection with detachable blades and hubs, which enabled propellers to be made up with two, three or four blades, adjustable as to pitch, in lieu of the integral complete two-bladed propellers. The first of this new type was supplied to a "Bristol Tourer" (240 h.p. Siddeley "Puma"), a report on which, dated October 15, 1920, runs thus :—



NOT FOR LIGHT 'PLANES! A Leitner-Watts metal airscrew (for Rolls-Royce "Condor III" engine), 16 ft. in diameter and 16 ins. width of blade.



A HYDRO-GLISSEUR FOR INDIA : The above craft was designed by Flt.-Lieut. O. G. Lywood, O.B.E., for H.H. the Nawab of Bahawalpur, India, for irrigation work on the Sutlej River. The engine, a 240 h.p. Siddeley "Puma," drives a 10-ft. Leitner-Watts metal propeller. With 16 passengers a speed of 30 m.p.h. has been made, and with half this number speeds up to 50 m.p.h. are possible.

"I am glad to say that it proved very valuable to us, for the rain and spray had completely ruined a wooden propeller before we put on yours. Your propeller stood up to the rain and spray, and appears to have been absolutely unaffected. It also appeared to be satisfactory as regards efficiency and vibration. It has proved reliable and durable, and it flies the machine all right."

Early in 1921—February 11, to be exact—the Aeroplane Experimental Establishment reported on the metal air-screw, in connection with flight trials, as follows :—

"The general smooth running of the engine fitted with this propeller has been observed by all pilots, being a distinct improvement over the same engine when fitted with standard two or four-bladed wooden propellers."

In the summer of 1922, one of the London-Continental machines was, for the first time, fitted with a Leitner-Watts metal air-screw, and *in a report from Croydon* (August 19) on the results obtained it was stated : "The running of this propeller is very pronouncedly smoother than that of the wooden propellers. So far as one can tell when flying under different conditions, the propeller seems to give about two to three miles an hour more speed and at least as good a climb."

On August 21 of the same year the Instone Air Line, Ltd., wrote the following on the Leitner-Watts metal air-screw fitted on one of their D.H. 34 machines : "The above experimental propeller, which was kindly loaned us by you, has now been flown 26·05 hours, and, as you are aware, has been removed for inspection. The pilots who have used this are Messrs. Barnard, Courtney and Robins, and in each case the report given by these pilots is very satisfactory. Mr. Courtney stated when he came off his first trip that the propeller was the best proposition he had sat behind, and the absence of fluttering was a most marked improvement over the wooden pattern."

A little later on in the year a world's record was put up with a machine fitted with Leitner-Watts metal airscrews. This was the non-stop duration flight of 34 hrs. 14 mins. accomplished by MM. Bossoutrot and Drouhin in October on a Farman "Goliath" (two 350 h.p. Renault engines).

In conclusion, we have a few extracts from Service reports from R.A.F. squadrons during 1923-24 :—

"A Bristol Fighter, having made a bad landing, tipped up, and the propeller hit the ground without any further damage being done beyond the tip of the propeller being bent. Undoubtedly, if this had been a wooden propeller, it would have splintered and caused the machine to go on its nose, involving further damage."

"The engine appears to run very smoothly with this type of propeller, and to have a good 'pull.'"

"With the all-metal propeller the performances of the machine (same load) were better than when fitted with the wooden propeller."

British Air Mail Leaflet

A NEW edition of the Air Mail Leaflet has just been issued by the Postmaster-General. This leaflet gives full particulars of the latest arrangements for sending letters, parcels, etc., by air to various places abroad, together with times of posting and delivery, and rates. Anyone desiring up-to-date information regarding the air mails can obtain a copy of the leaflet, free of charge, on application at any Head or Branch Post Office, or to the Secretary, Air Mails, G.P.O., London, E.C.1.

The Lancashire Aero Club

THE Lancashire Aero Club announce the election of Viscount Leverhulme as President of the club. Viscount Leverhulme, who is well known for his interest in Lancashire movements, should be of much help to the new club. Besides the new glider at present being designed, work on a simple Canute glider is to be commenced at once, and when weather permits the glider already finished is to be tested. The club subscription is a very low one, and the only qualification for membership is an interest in flying. Those who know nothing of aeroplanes help with the building of the machines under the skilled direction of the experts who are among the members, and are being taught to handle the gliders on the 'drome. The Secretary of the club is J. F. Leeming, of 38, Albert Road, Hale, Cheshire.

PERSONAL

Killed.

Flying Officer EDWARD EWART PAULL SMITH, who was killed on June 25 whilst flying at the Marine Aircraft Experimental Station, R.A.F., Felixstowe, was the only son of Mrs. M. Paull Smith, of Briarcombe, Farnham Lane, Haslemere, Surrey. His age was 26.

PUBLICATIONS RECEIVED

Technical Notes.—Nos. 181. Interference of Multiplane Wings Having Elliptical Lift Distribution, by H. von Sanden. 182. Induced Drag of Multiplanes, by L. Prandtl, March, 1924. 183. Static Stability of Seaplane Floats and Hulls, by W. S. Diehl, March, 1924. 184. Note on Vortices and their Relation to the Lift of Airfoils, by M. M. Munk, March, 1924. 185. Influence of Inlet Air Temperature and Jacket Water Temperature on Initiating Combusion in a High-speed Compression Engine, by R. Matthews and A. W. Gardiner. March, 1924. 186. Testing Airplane Fabrics, by A. Pröll. April, 1924. 187. The Induction Factor Used for Computing Rolling Moment due to the Airerons, by M. M. Munk. April, 1924. 188. Longitudinal Oscillation of an Airplane. Part I—Problem and Method. By R. Fuchs and L. Hopf. April, 1924. 189. Torsional Strength of Nickel Steel and Duralumin Tubing as Affected by Ratio of Diameter to Gauge Thickness, by N. S. Otey. April, 1924. 190. Comparing the Performance of Geometrically Similar Airplanes, by M. M. Munk and E. P. Warner. April, 1924. 191. Effect of Wind Tunnel Turbulence upon the Forces Measured on Models, by W. L. Le Page and J. T. Nichols. May, 1924. 192. Note on Pressure Distribution over the Hull of Elongated Airships with Circular Cross Section. May, 1924. U.S. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Department of Overseas Trade. Report on the Economic Situation of Denmark. April, 1924. By R. M. A. Turner, O.B.E. London : H.M. Stationery Office, Kingsway, W.C.2. Price 2s. net.

The Scandal of Uncompensated Damage by Enemy Action. By the Hon. Esmond Harmsworth, M.P. Reprinted from the *English Review*, May, 1924. The Cornwall Press, Ltd., Stamford Street, London, S.E.1.

Department of Overseas Trade. Report on the Economic Financial and Industrial Conditions of Finland, March, 1924. By C. H. Mackie. H.M. Stationery Office, Kingsway, London, W.C.2. Price 2s. net.

Beardmore Aero Engines and Aircraft. William Beardmore and Co., Ltd., 36, Victoria Street, London, S.W.1.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : Cyl. = cylinder ; i.c. = internal combustion ; m. = motor
The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1923

Published July 3, 1924

8,225. ENGLISH ELECTRIC CO., LTD., and F. MORRIS. Electrical devices for control of mechanical movements. (216,972.)
11,742. H. JUNKERS. Cooling of i.c. engines. (197,929.)
13,570. J. A. LATHAM. Stays for aeroplanes, etc. (204,304.)
14,156. FAIREY AVIATION CO., LTD., and C. R. FAIREY. Aeroplane rudders. (217,031.)
30,283. G. FORNACA. Superfeed systems for i.c. engines. (217,138.)

Published July 10, 1924

7,046. A. M. NICOLSON. Steering means for aircraft, etc. (217,302.)
7,062. H. G. HARRISON. Duel-control systems for aircraft. (217,304.)
7,652. SCHNEIDER ET CIE. Sighting-apparatus. (207,491.)
8,977. J. W. BARNES. Air-speed indicators. (217,358.)
15,239. INGERSOLL-RAND CO. Rotary cylinder motors. (217,421.)
30,118. H. H. THOMPSON. Gyroscopic compasses. (209,052.)

APPLIED FOR IN 1924

Published July 10, 1924

8,797. SOC. DES AEROPLANES H. ET M. FARMAN. Brakes. (213,938.)

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.
Telegraphic address : Truditur, Westcent, London.
Telephone : Gerrard 1828.

SUBSCRIPTION RATES

"FLIGHT" *will be forwarded, post free, at the following rates* :—

UNITED KINGDOM	s.	d.	ABROAD*	s.	d.
3 Months, Post Free ..	7	7	3 Months, Post Free ..	8	3
6 ,, ,, ..	15	2	6 ,, ,, ..	16	6
12 ,, ,, ..	30	4	12 ,, ,, ..	33	0

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates.

* *Foreign subscriptions must be remitted in British currency.*

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, *and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.*

Should any difficulty be experienced in procuring "FLIGHT" *from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.*